

WHAT IS CLAIMED IS:

1. A handover communication method in a mobile communication system having a mobile station, a base station and a base station controller, comprising steps
5 of:
 - transmitting data and an error correction code for said data from a transmitting side via separate transmission paths; and
 - at a receiving side, receiving said data and error
10 correction code for said data and subjecting the received data to error correction processing using the received error correction code.
2. A handover communication method in a mobile communication system having a mobile station, base
15 stations and a base station controller, comprising steps of:
 - transmitting user data, which is from the base station controller, from a first base station to the mobile station when a downlink transmission is
20 performed in a handover state;
 - transmitting error correction code for said user data, which is from the base station controller, from a second base station to said mobile station; and
 - at said mobile station, subjecting the received
25 user data to error correction processing using the received error correction code.
3. A handover communication method in a mobile communication system having a mobile station, base stations and a base station controller, comprising
30 steps of:
 - transmitting user data from the mobile station to a first base station when an uplink transmission is performed in a handover state;
 - transmitting error correction code for said user
35 data from said mobile station to a second base station; and
 - at the base station controller, subjecting said user data received from said first base station to

error correction processing using the error correction code received from said second base station.

4. A handover communication method of a mobile communication system having a mobile station, a
5 sectored base station and a base station controller, comprising steps of:

transmitting user data, which is from the base station controller, from a first sector of said
sectored base station to the mobile station when a
10 downlink transmission is performed in a handover state;

transmitting error correction code for said user data, which is from the base station controller, from a second sector of said sectored base station to said mobile station; and

- 15 at said mobile station, subjecting the received user data to error correction processing using the received error correction code.

5. A handover communication method of a mobile communication system having a mobile station, a
20 sectored base station and a base station controller, comprising steps of:

transmitting user data from the mobile station to a first sector of said sectored base station when an uplink transmission is performed in a handover state;

- 25 transmitting error correction code for said user data from said mobile station to a second sector of said sectored base station; and

at said sectored base station or said base station controller, subjecting said user data received from
30 said first and second sectors to error correction processing using said error correction code.

6. A handover communication method according to claim 2 or 4, wherein when a downlink transmission is performed, said base station controller:

- 35 generates said error correction code; and
transmits said user data and said error correction code to said base station.

7. A handover communication method according to claim

3 or 5, wherein when an uplink transmission is performed, said mobile station:

generates said error correction code; and

transmits said user data and said error correction

5 code to said base station.

8. A handover communication method according to claims 2 to 5, further comprising steps of setting target qualities of respective ones of user data and error correction code at receipt thereof to values lower than
10 final desired quality of the user data.

9. The handover communication method according to claims 2 to 5, further comprising step of variably controlling correction ability of error correction code based upon a difference between target quality and
15 actual quality.

10. A handover communication method according to claims 2 to 5, further comprising steps of:

monitoring decoding success rate after error correction over a fixed period of time; and

20 variably controlling correction ability of error correction code based upon said decoding success rate.

11. A handover communication method according to claims 2 to 5, further comprising step of controlling error correction ability based upon power control
25 information generated based upon size relationship between receiver SIR and target SIR.

12. A handover communication method according to claims 11, further comprising steps of monitoring said power control information over a fixed period of time,
30 strengthening the error correction ability if a power-increase command is greater than a threshold value, and weakening the error correction ability if a power-decrease command is greater than a threshold value.

13. A handover communication method according to
35 claims 8, further comprising steps of comparing quality prevailing after error correction with desired quality, strengthening error correction ability if quality prevailing after error correction falls below said

desired quality and weakening error correction ability if quality prevailing after error correction exceeds the desired quality.

14. A handover communication method according to
5 claims 2 to 5, further comprising step of transmitting user data via a transmission path having good wireless transmission conditions among a plurality of radio transmission paths between said base station and mobile station.
- 10 15. A handover communication method according to claim 14, wherein an add-on data identifier indicating which of user data and primary error correction code has been added on is transmitted upon being appended to a frame sent and received between the mobile station and base
15 station and a frame sent and received between the base station and base station controller.
16. A handover communication method according to claim 14, further comprising step of detecting a transmission path having good wireless transmission conditions based
20 upon an RSCP value of each transmission path.
17. A handover communication method according to claim 14, further comprising step of detecting a transmission path having good wireless transmission conditions based upon number of times a transmission-power raise command
25 or transmission-power lower command, which is contained in power control information of each transmission path, is issued within a prescribed period of time.
18. A communication system having a mobile station, base stations and a base station controller, wherein
30 the mobile station and base stations possess a communication path on which communication is possible wirelessly, the base stations and base station controller possess a communication path on which communication is possible by wire, and communication is
35 performed in a handover state by forming a plurality of transmission paths, on which communication is possible between the base station controller and mobile station, using these communication paths, wherein

at the time of a downlink transmission in the handover state in which communication is performed via a plurality of transmission paths from the base station controller to the mobile station via a plurality of

5 base stations, the base station controller transmits user data to a first base station via one transmission path and transmits a primary error correction code for said user data to a second base station via another transmission path;

10 said first base station transmits encoded data, which has been obtained by subjecting said user data to secondary error correction encoding processing, to the mobile station;

said second base station transmits encoded primary

15 error correction code, which has been obtained by subjecting said primary error correction code to secondary error correction encoding processing, to the mobile station; and

the mobile station applies a secondary error

20 correction to user data received from said first base station, applies a secondary error correction to the encoded primary error correction code received from said second base station, and applies an error correction to user data, which prevails after said

25 secondary error correction, using primary error correction code prevailing after the secondary error correction.

19. A communication system having a mobile station, base stations and a base station controller, wherein

30 the mobile station and base stations possess a communication path on which communication is possible wirelessly, the base stations and base station controller possess a communication path on which communication is possible by wire, and communication is

35 performed in a handover state by forming a plurality of transmission paths, on which communication is possible between the base station controller and mobile station, using these communication paths, wherein

when an uplink transmission is performed in the handover state in which communication is performed via a plurality of transmission paths from the mobile station to the base station controller via a plurality of base stations, the mobile station transmits encoded data, which has been obtained by subjecting user data to secondary error correction encoding processing, to a first base station, and transmits encoded primary error correction code, which has been obtained by subjecting primary error correction code for said user data to secondary error correction encoding processing, to a second base station;

said first base station subjects user data received from the mobile station to secondary error correction processing and transmits the data to the base station controller via one transmission path;

said second base station applies a secondary error correction to the encoded primary error correction code received from the mobile station and transmits the primary error correction code to the base station controller via another transmission path; and

the base station controller subjects user data prevailing after secondary error correction received from said first base station to error correction processing using the primary error correction code prevailing after secondary error correction received from said second base station.

20. A communication system having a mobile station, a sectorized base station and a base station controller, wherein the mobile station and sectorized base station possess communication paths on which communication is possible wirelessly, the sectorized base station and base station controller possess a communication path on which communication is possible by wire, and communication is performed in a handover state by forming a plurality of transmission paths, on which communication is possible between the base station controller and mobile station, using these

communication paths, wherein

at the time of a downlink transmission in the
handover state in which communication is performed via
a plurality of transmission paths from the base station
5 controller to the mobile station via a plurality of
sectors of the sectored base station, said base station
controller transmits user data to said sectored base
station;

said sectored station executes primary error
10 correction code generation processing with respect to
user data, transmits encoded data, which has been
obtained by subjecting said user data to secondary
error correction encoding processing, to the mobile
station via a first sector, and transmits encoded
15 primary error correction code, which has been obtained
by subjecting primary error correction code for said
user data to secondary error correction encoding
processing, to the mobile station via a second sector;
and

20 the mobile station applies a secondary error
correction to encoded data received via the first
sector of said sectored base station, applies a
secondary error correction to the encoded primary error
correction code received via said second sector, and
25 then applies error correction processing to user data,
which prevails after the secondary error correction,
using primary error correction code prevailing after
the secondary error correction.

21. A communication system having a mobile station, a
30 sectored base station and a base station controller,
wherein the mobile station and sectored base station
possess communication paths on which communication is
possible wirelessly, the sectored base station and base
station controller possess a communication path on
35 which communication is possible by wire, and
communication is performed in a handover state by
forming a plurality of transmission paths, on which
communication is possible between the base station

controller and mobile station, using these communication paths, wherein

at the time of a handover state of an uplink transmission in which communication is performed via a plurality of transmission paths from the mobile station to the base station controller via a plurality of sectors of the sectored base station, said mobile station transmits encoded data, which has been obtained by subjecting user data to secondary error correction encoding processing, to said sectored base station via a first sector and transmits encoded primary error correction code, which has been obtained by subjecting primary error correction code for said user data to secondary error correction encoding processing, to said sectored base station via a second sector; and

said sectored base station applies a secondary error correction to encoded data received from the mobile station, applies the secondary error correction to encoded primary error correction code received from said mobile station, and transmits user data, which has been obtained by subjecting user data prevailing after the secondary error correction to error correction processing using primary error correction code prevailing after said secondary error correction, to said base station controller.

22. A communication system having a mobile station, a sectored base station and a base station controller, wherein the mobile station and sectored base station possess communication paths on which communication is possible wirelessly, the sectored base station and base station controller possess a communication path on which communication is possible by wire, and communication is performed in a handover state by forming a plurality of transmission paths, on which communication is possible between the base station controller and mobile station, using these communication paths, wherein

at the time of a downlink transmission in the

handover state in which communication is performed via a plurality of transmission paths from the base station controller to the mobile station via a plurality of sectors of the sectored base station, the base station controller transmits user data and primary error correction code for said user data to said sectored base station;

5 said sectored base station transmits encoded data, which has been obtained by subjecting said user data to secondary error correction encoding processing, to the mobile station via a first sector, transmits encoded primary error correction code, which has been obtained by subjecting said primary error correction code to secondary error correction encoding processing, to the mobile station via a second sector; and

15 the mobile station applies secondary error correction processing to encoded data received via the first sector of said sectored base station, applies secondary error correction processing to encoded primary error correction code received via the second sector, and applies error correction processing to user data, which prevails after said secondary error correction, using primary error correction code prevailing after the secondary error correction.

20 23. A communication system having a mobile station, a sectored base station and a base station controller, wherein the mobile station and sectored base station possess communication paths on which communication is possible wirelessly, the sectored base station and base station controller possess a communication path on which communication is possible by wire, and communication is performed in a handover state by forming a plurality of transmission paths, on which communication is possible between the base station controller and mobile station, using these communication paths, wherein

35 when an uplink transmission is performed in the handover state in which communication is performed via

a plurality of transmission paths from the mobile station to the base station controller via a plurality of sectors of a sectored base station, said mobile station transmits encoded data, which has been obtained
5 by subjecting user data to secondary error correction encoding processing, to said sectored base station via a first sector, and transmits encoded primary error correction code, which has been obtained by subjecting
10 primary error correction code for said user data to secondary error correction encoding processing, to said sectored base station via a second sector;

said sectored base station subjects encoded data received from the mobile station to secondary error correction processing and transmits the data to said
15 base station controller, and subjects encoded primary error correction code received from said mobile station to secondary error correction processing and transmits the primary error correction code to said base station controller; and

20 said base station controller subjects user data prevailing after secondary error correction received from said sectored base station to error correction using the primary error correction code prevailing after secondary error correction.

25 24. A mobile station of a mobile communication system, which has a mobile station, base stations and a base station controller, for transmitting user data from the base station controller to the mobile station via at least two base stations in a handover state,
30 comprising:

means for receiving user data, which is from the base station controller, from a first base station when a downlink transmission is performed in the handover state;

35 means for receiving error correction code for said user data, which is from the base station controller, from a second base station when a downlink transmission is performed in the handover state; and

means for decoding the user data by subjecting the received user data to error correction processing using the error correction code received.

25. A mobile station according to claim 24, further comprising:

means for transmitting user data to said base station controller via said first base station when an uplink transmission is performed in the handover state; and

10 means for transmitting error correction code for said user data, which is transmitted to said base station controller, via said second base station when an uplink transmission is performed in the handover state.

15 26. A mobile station of a mobile communication system, which has a mobile station, a sectored base station and a base station controller, for transmitting user data from the base station controller to the mobile station via at least two sectors of the base station in a handover state, comprising:

20 means for receiving user data, which is from said base station controller, from a first sector of said sectored base station when a downlink transmission is performed in the handover state; and

25 means for receiving error correction code for said user data, which is from said base station controller, from a second sector of said sectored base station when a downlink transmission is performed in the handover state; and

30 means for decoding the user data by subjecting the received user data to error correction processing using the error correction code received.

27. A mobile station according to claim 26, further comprising:

35 means for transmitting user data to said base station controller via the first sector of said sectored base station when an uplink transmission is performed in the handover state; and

means for transmitting error correction code for said user data, which is transmitted to said base station controller, via the second sector of said sectored base station when an uplink transmission is performed in the handover state.

28. A transmission control apparatus in a wireless communication system, comprising:

transmitting means for receiving data from a first bus and error correction data, which is for correcting this data, from a second bus; and

control means for exercising control in such a manner that said error correction data is received completely at a device, to which said data is to be transmitted, by the time receipt of said data at said device is completed or within a prescribed period of time following completion.

29. A wireless communication apparatus comprising:

transmitting means for transmitting data via first and second buses; and

transmitting means for transmitting error correction data with regard to the data of said first bus and the data of said second bus via a third bus.

30. A wireless communication apparatus comprising:

receiving means for receiving data via first and second buses;

receiving means for receiving error correction data with regard to the data of said first bus and the data of said second bus via a third bus; and

correcting means for subjecting the data from said first and second buses received by said receiving means to error correction processing using said error correction data received via said third bus.

31. A wireless communication apparatus comprising:

transmitting means for transmitting some sequences of a plurality of data sequences, which have been obtained by turbo encoding, via at least radio transmission paths different from those of the other sequences.

32. A wireless communication apparatus comprising:

receiving means for receiving some sequences of a plurality of data sequences, which have been obtained by turbo encoding, via at least radio transmission paths different from those of the other sequences; and

- 5 decoding means for performing turbo decoding using said plurality of data sequences that have been received and obtained via said radio transmission paths that are different.